Human Capital Education and Sustainable Economic Growth in Nigeria

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Abstract

The focus of the study is to assess the extent at which investment in human capital education can affect economic performance in Nigeria with particular emphasis on sustainable level of economic growth and development over the last few decades. It has been argued in the extant literature that the nature of education provided in Nigeria is so poor that the prospect of sustainable economic development is not likely to come by. The design of the study is basically anchored on secondary data and econometric analysis, whilst all variables related to the human capital development constitutes the population of the study. Accordingly, the sample is made up of one dependent variable and four explanatory variables covering the period from 1986-2021. They include gross domestic product used as a function of secondary school enrolment, primary school enrolment, adult literacy rate as well as public spending on education. The data were obtained from various sources include the Central Bank of Nigeria's various issues of Annual Reports and Statement of Account and Statistical Bulletin as well as World Bank data bases. The data were analyzed using the Johansen co-integration technique and the parsimonious error correction model, in order to ascertain the long and short runs impact of the variables on economic growth in Nigeria. Accordingly, it was evidenced in the study that equilibrium long run relationship exists between economic growth and the selected indicators of human capital development. Specifically, it was observed in the study that enrolments into primary schools, secondary schools and adult literacy rate had positive and significant effect on economic growth in Nigeria. However, the study found that the level of government spending on education had negative but insignificant influence on human capital development in Nigeria. Among other things, the study recommended for the need to increase budgeting allocation for the educational sector that will enable the provision of adequate facilities and good learning environment.

Keyword: Sustainable economic development, economic growth, human capital education, Nigeria, ECT.

JEL Classification: O15, Q01.

1. Introduction

The noble role played in using education as effective means of governance and nation building has been acknowledged in both developed and developing countries in various stages of economic growth and development. Accordingly, there is abiding evidence that national development and capacity building in an economy are anchored on sound education thereby necessitating increased investment in the sector with the purpose of stimulating growth and development. According to Emediegwu and Clement (2016), a number of benefits are attributed to provision of basic education, capacity building and training as well as research, all of which goes to suggest that very little or no sustainable economic growth and development

will occur if investment in human capital is not raised and taken very seriously. Yusuff (2021) averred that man is the center of education because of his contribution to human and material development occasioned by improvement in thinking, skills and attitudes. He went further to say that knowledge driven economic is very competitive more so at the world stage where education is used as a channel through which human development resource is achieved. Abanyam *et al*., (2020) argued that higher education remains as cardinal tool required to bring about durable achievement thereby leading to sustainable economic growth and development, which in turn promotes conducive environment for learning as well as creates quality workforce. Likewise, it supports industries and businesses and aids the individual in undertaking scientific research with the effect that technology is promoted and innovations are explored as well as instills in individuals the sense of achievements.

On his part, Ogunjemilua (2021) agreed to the submission that educational system in Nigeria has gone through many changes over the last few years and that many more changes are likely to occur before the end of the century. He noted that one of the many aims and objective of national education policy in Nigeria is the inclusion of the needed national unity so vital for a nation like Nigeria as well as national consciousness. Njoku and Onyegbula (2017) were of the opinion that a careful coordination in the provision of education geared towards boosting sustainable development would include access to on-the-job training, acceptable manpower planning and improved infrastructure as anything otherwise would lead to unemployment and underemployment. The authors submitted that the provision of quality education is the key to good learning opportunities most especially at the foundational level such as primary and secondary school education that provide sound training to all pupils. In their opinion, the term 'quality education' differs from access to education in that quite a number of youths in sub-Sahara Africa (SSA) countries including Nigeria lack basic literacy skills by all standards yet a good number of the population is believed to have access to education. They concluded that the realization of these issues led SDGs education for states to formulate policy where all boys and girls would attain on the average quality primary and secondary education by 2030s (Njoku & Onyegbula, 2017; Chijioke & Amadi, 2019).

It has been argued that meaningful development can only take place if there is sound financial commitment to education sector that will provide conducive learning environment. In Nigeria, the level of investment in education is not the

type that will bring about turnaround chain of event in the country quest for development. Available statistics revealed that budgetary allocation to the educational sector has been small with the result that basic facilities like class rooms, laboratories and accommodations are in a very bad shape. For instance, government spending on the sector stood ₦0.84 billion in 1986, rose to ₦15.12 billion in 1996 and further increased to ₦157.12 billion in 2006. In 2016, expenditure by government on the educational sector recorded the sum of ₦373.68 billion and by 2021, the government spending on education further increased to ₦772.42 billion. Although, there seems to be continuous increase in government spending on the sector it is relatively small when compare to other sectors such as defence and transportation sectors. Besides, the allocated budget to education sector in Nigeria has always fall short of the 26% of GDP recommended by United Nations which has partly contributed to the unsatisfactory performance of economic growth rate in Nigeria. In 1986 for instance, the growth rate of the economy was 0.1% and increased to 4.2% in 1996 and further marginal increase to 6.1% in 2006. In 2016, economic growth rate in Nigeria declined -1.6% signifying evidence of recession, a development which the economy was yet fully recover from by 2020 when the world recorded the deadly covid-19 pandemic outbreak. Thus, the growth rate of the economy in 2020 anchored on -1.9% before oscillating marginally to 3.4% in 2021.

Similar to the poor budgetary allocation is the fact that teachers, academic and non-academic staff in the educational sector in Nigeria are poorly paid. The result is that the qualities of output turned out from public schools most especially at the primary and secondary school levels are believed to be poor thereby giving rise to high patronage of private schools that charges exorbitant fees above the reach of average Nigerians. this is why Babatunde and Adetabi (2005) submitted that the standard of education usually provided in Nigeria has continue to fall over the last few decades and therefore far from being satisfactory as the mandatory six years in primary schools in most cases yield little or no result. Most primary school graduates cannot write their names let alone writing a simple sentence. The poor performance of the pupils may not be unconnected with high teachers-pupil ratio put at over 50 to 1 and at the same time the literacy rate for male youth stood at 13%, while female youth accounted for 20% by late 1990s (Babatunde & Adetabi, 2005). Although, remarkable improvement has taken place in recent time as adult literacy rate has risen to over 65% by 2021.

There are several studies in the literature that seek to unravel the extent of the effect of human capital education on economic growth in developing countries including Nigeria. For instance, there are studies that found positive relationship (see Eigbiremolen & Anaduaka, 2014; Jaiyeoba, 2015; Odo, 2016; Uduh & Benedict, 2017; Chijioke & Amadi, 2019). On the contrary, the findings from some other studies submitted that the effect of human capital investment on economic growth is negative. These authors include Emediegwu and Clement (2016), Ogunjemilua (2021) and Raymond and Ekponaanuadum (2021). However, investigation conducted by Ogunleye et al (2017) could not establish relationship at all. These development makes it inconclusive to say with certainty to what extent economic growth in Nigeria responds to changes in human capital investment. Likewise, a number of these studies has employed different variables such as primary school enrolments, secondary school enrolments, tertiary education enrolments and life expectancy rate in assessing their impact on economic growth (Jaiyeoba, 2015; Emediegwu & Clement, 2016; Ogunleye et al, 2017). However, none of these studies include adult literacy rate in these assessment most especially in the case of Nigeria. Therefore, the current study intends to close the lacuna by adding adult literacy rate to the model in addition to some of the variables utilized by prior studies in their investigation of human capital education-growth nexus in order to observe its level of contribution.

It is on this realization that the study undertaken to contribute to existing body of knowledge in the development literature. Therefore, the study has as its objective to assess the extent of the effect of investment in human capital education on economic growth in Nigeria. The sequence of the reminder of the paper follows thus. The survey of related literature is presented in section two, while section three contains the methodology. In section four, the findings of the study are presented, while section five contains conclusion and policy recommendations on the strength of findings.

2.0 Review of the Literature

Our attempt in this section is to present a brief conceptual review particularly of the variables employed in the study as well as made a brief empirical survey of related studies.

Concept of Economic Growth and Development

The gross domestic product is used as a proxy for economic growth which has been defined as a sustained increase in per capita income. It refers to a situation of

increasing growth rate arising from the production of goods and services during a particular period of time using the GDP indicator. The GDP indicator is used in measuring how healthy the economy has been with consequent of higher employment and improved standard of living (Adama, et al., 2022). Accordingly, the concept of sustainable development has evolve variously in the extant literature. Akarowhe (2018) defined national development as efforts made by any nation to ensure that the lives of her citizens are improved to at least minimum acceptable standard. Likewise, it also refers to a situation in which the government takes upon itself by ensuring that the social welfare of the citizens are provided for by way of social amenities which include functional and qualitative education, transportation, clean and drinkable water, stable power supply and good health care. In national development discourse, it is expected to lead to improvement in the economy whose measurement is normally proxied by sustained and continuous increase in the gross national product. Likewise, some sort of other social indicators are considered such as unemployment, poverty rate, literacy rate as well as provision of affordable healthcare system (Akarowhe, 2018). National development can also be seen as a way to ensure that all or majority of all sectors in the economy witnessed improvement which will act as stimulate for better life for majority of individuals in a country. From the perspective of sustainable development, it has been argued by scholars that it encompasses any development strategy that seeks not only to address the needs of the present generation, but also make sure that the ability of future generation to meet their needs are not compromised in whatever way (Odo, 2016; Ogunleye, et al., 2017).

Concept of Human Capital education

Meanwhile, there seems to be no single generally accepted definition that covers all of the very concerns of human capital in the literature. The concept therefore encompasses the abilities and skills of individuals and countries. This is why Adenuga and Otu (2002) submitted that human capital referred to the entire population of a nation that provided the back bone upon which any present and future production activities including distribution of goods and services are anchored. In human capital education, a number of variables are embedded which include the required skills and knowledge as well as abilities. All of which are available and regarded as components in the human resource stock of a nation. Likewise, education in human capital refers to all hitherto acquired stock of knowledge, competence of the labour force, personal and social characteristics which include creative skills required by labour to undertake any assigned tax thereby adding to economic value (Simkovic, 2012 cited in Nkogbu, 2014).

According to OECD (2001) cited in Nkogbu (2014), the concept of human capital entails the individual's ability to acquire the basic requisite criteria and skills, knowledge, competence and all other attributes that will facilitate the understanding of how to create his economic, social and personal well-being. This is why some authors submitted that human capital development is synonymous with human resource. In this regards, human capital induced investment is akin to a process needed to acquire and increase the number of those not only with skills education, but possessed relevant experience required to enhance a nation's economic and political development (Wilson, 2017 cited in Raymond & Ekponaanuadum, 2021). Also, the concept encompasses enrolments into various levels of education as well as expenditure by government at all levels on the educational sector.

Empirical Literature

From the empirical corridor, a number of studies have conducted empirical findings aimed at ascertaining the relationship between economic growth and human capital education and mixed findings were uncovered. It is in this realization that Fadiya (2010) utilized model of error correction on data from Nigeria spanning the period 1977-2007 to appraise the nature of the effect of human capital education on growth. Accordingly, the presence of equilibrium long run relationship between growth and human capital investment was observed by the study. Specifically, the study noted that human capital spending, gross fixed capital formation and labour force had positive and significant influence on economic growth in Nigeria. Aminu (2011) carried out a similar study by using data covering 1977-2007 to assess the likely effect of government spending on health and education (proxies for human capital induced investment) on growth using Nigeria based data. The study tested for the presence of long run relationship using co-integration approach as well as utilized the ordinary least square (OLS) technique in exploring the contemporaneous dynamics among the variables. The presence of long run equilibrium relationship was established between the dependent variable and its determinants in the model. Observably, it was found by the study that government spending on health and education exerted positive and significant effect on growth in Nigeria in the period under review. This study gives supporting claim to the findings earlier reached by Fadiya (2010). Likewise, a study conducted by Eigbiremolen and Anaduaka (2014) attempted to x-ray the degree of the effect of human capital education spending on growth in Nigeria with data spanning 1999-2012. Employing the OLS methodology, similar findings in line with prior studies were uncovered, namely that investment spending in human capital had positive and significant effect on growth in Nigeria during the period under review.

Meanwhile, in what appear as a digression from the path of prior studies who relied prominently on secondary data, Nkogbu (2014) documented a study to show if indeed investment in human capital exerted strong effect on sustainable growth in the Nigerian economy. The use of questionnaires consisting of 296 respondents were administered after which descriptive statistics and chi-square technique were utilized for the analysis. It was discovered by the study that investment spending on human capital is a necessary ingredient as it has the potentials to spur growth and development of any economy including Nigeria. However, the study was concerned on the difficulty associated with attaining a meaningful economic development without first putting in place adequate investment in human capital education. Jaiyeoba (2015) employed the Johansen co-integration approach and OLS model using data that covered the period, 1982-2011 in his effort to appraise the response of economic growth to changes in health and education spending in Nigeria. The independent variables include government spending on health and education, gross capital formation and post-primary and tertiary education enrolments. It was noted that the presence of long run relationship among the variables was evidenced in the study. Specifically, findings further indicated a significant positive impact of all independent variables on growth in Nigeria. The findings of the study supported several other studies such as Fadiya (2010), Aminu (2011) and Eigbiremolen and Anaduaka (2014).

Furthermore, a similar study conducted by Emediegwu and Clement (2016) assessed the extent at which the effect of investment in education affected growth performance in Nigeria during the period 1980 to 2015. The independent variables for the study include gross capital formation, human capital education spending as well as enrolments into primary and secondary school education. The technique of error correction mechanism for short run analysis and co-integration approach for long run dynamic model were employed for the study. Accordingly, it was observed by the study a notable evidence of statistical significant positive impact of budget allocation for education on economic growth contrary to significant negative impact of post primary enrolment during the short run period. However, it was found in the long run analysis that all the independent variables exerted significant influence on growth in Nigeria, thereby leading supporting claim to numerous prior studies (Aminu, 2011, Eigbiremolen & Anaduaka, 2014; Jaiyeoba, 2015).

In their study, using data covering 1980-2013 scrutinized the extent of the relationship existing between investment in human capital education and growth

performance in Nigeria. The study employed the relatively recent econometric methodology namely the autoregressive distributed lag (ARDL) model that provided the ground for short and long run analysis. The findings from the study revealed that public spending on health, enrolment into secondary education, life expectancy and gross capital formation exerted positive but insignificant influence on growth in the long run. Contrariwise, economic growth seems to exhibit negative and significant response to changes in enrolments into primary and tertiary education in Nigeria. Odo (2016) conducted a study that tried to ascertain the extent government spending on education and health affected the level of growth performance in Nigeria. The method of error correction methodology that allows for short run estimation was employed by the study and findings revealed a significant positive impact of human education spending on economic performance in Nigeria, contrary to spending on health that is significant and inversely related to economic growth in the period under review. In this regards, the study supported the findings of Aminu (2011) and Adeyemi and Ogunsola (2016).

On their part, Uduh and Benedict (2017) documented a study to assess how expenditure on Nomadic education affected the performance of the economy in Nigeria using data that spanned 1986-2012. The OLS method was utilized by the study and findings indicated that spending on nomadic education exerted positive and significant influence on economic growth during the period under review in Nigeria. Thus, the study also leads supports to prior studies (Adeyemi & Ogunsola, 2016; Odo, 2016). In a similar study, Ogunleye et al (2017) model the relationship between economic performance and human capital education in Nigeria for the period 1981-2005 using the technique of OLS regression model in evaluating the study. A number of human capital indicators included in the model are government spending on health and education, life expectancy ratio as well as primary, secondary and tertiary school enrolments. Accordingly, it was observed by the study that economic growth responded positively and significantly to changes in health and education spending as well as enrolments into secondary and tertiary school education. However, the study could not establish a relationship between growth and life expectancy ratio as well as primary school enrolment even though these variables had negative signs. These findings also give supporting claim to prior studies such as Adeyemi and Ogunsola (2016) and Odo (2016).

Conducting related study on Nigeria, Chijioke and Amadi (2019) opined that human capital development entails the provision of conducive environment for learning by all individuals thereby resulting in increased organizational or national

goals. Their paper assessed how human capital education spending affected the performance level of the economy with data covering the period 1986-2017. The study which utilized the OLS technique found evidence to support positive significant effect of all three explanatory variables namely, gross capital formation, government spending on education and health on growth performance in Nigeria thereby validating the findings of prior studies most especially Uduh and Benedict (2017) and Ogunleye et al (2017).

In a more recent study, Raymond and Ekponaanuadum (2021) explored the extent at which human capital education expenditure has affected the performance of the Nigerian economy. The concept of misery index was developed by the study and was made a depended variable, while independent variables for the model are pupil-teacher ratio, human capital education spending as well as government spending on the health sector. The study utilized the Johansen co-integration approach to determine the level of long run association for the data, while the technique of error correction method was employed for the short run analysis, whilst the variables spanned the period 1981-2018. Accordingly, the study observed the presence of equilibrium long run relationship existing between economic performance and the selected variables of human capital education. Further, the study found that both in the long run and short run, significant negative effect of pupil teacher ratio on the misery index was observed. Yusuff (2021) submitted that the inability of Al-Majiri children to acquire any known vocational training has affected the quest for sustainable economic development in Nigeria. His paper appraise how vocational training and entrepreneurship skills can be used to improve the system of Al-Majiri in the north aimed at fast-tracking the needed sustainable economic development that have eluded Nigeria for so long. Employing systematic literature review and narrative-textual case study, the study found evidence to support that exposing Al-Majiri children to entrepreneurship skills and vocational training which include but not limited to shoe-making, poultry farming, tailoring, repair of phones, mechanics as well as weaving is a potent source of stimulating sustainable economic development in Nigeria.

In a similar study conducted by Emeghara, et al., (2021), the authors appraised the nature of relationship that existed between investment in human capital and the growth performance of the Nigerian economy. The dependent variable for the study is gross domestic product, while human development index, household health expenditure, household education expenditure, government education expenditure and government health expenditure as well as gross fixed capital formation are the

regressors. To test for long run relationship among the variables, the Johansen co-integration approach was employed, while the technique of error correction model was utilized for the short run contemporaneous analysis on data covering 1981-2018. Accordingly, it was found out by the study that household education expenditure is negative and significant in affecting economic growth and development as against the significant positive impact exerted by household spending on health, gross capital formation and human development index during the long run analysis. Meanwhile, investment by households spending on health and human development index had significant and positive impact on economic growth, contrarily to the significant negative effect from household spending on education during the short run. The positive effect of health expenditure and the negative impact exerted by education spending are similar to numerous prior empirical findings such as Odo (2016), Ogunleye, et al., (2017), Chijioke and Amadi (2019) and Raymond and Ekponaanuadum (2021).

Theoretical Framework

A number of theories exist in the literature trying to explain the need for human capital education in which few of such theories are presented here.

Theory of Human Capital

This theory was formulated by Romer (1986) cited in Chijioke and Amadi (2019) who anchored his argument on the power of education to transform a man thereby making him more productive with higher efficiency predicated on his cognitive skills. The literature further submitted that people can only increase their stock of human capital only by increasing investment in education in areas such as on the job training, public spending on education as well as the health sectors (Schultz, 1961 cited in Chijioke, & Amadi, 2019). It was further argued that investment in human capital can only increase if and only if depreciation is less than gross investment. In some countries such as the United States, investment in education is regarded as investment in human being aimed at increasing productivity in future and considers such investment more critical than physical investment. For this reason, the US sees to it that spending in education is three times greater than physical investment. Leading support to the theory they averred that as provisions for schooling are expanded, there is tendency for greater stock of capital in the society, leading to increase in technical and specialized knowledge, high skilled professions, national productivity as well as enhanced the rate of growth (Chijioke, & Amadi, 2019).

Human-Capital Augmented Solow Model

Developed and expanded by Mankiw et al., (1992), they see human capital as additional input in the production process. Further, they liken the modelling of human capital to that of physical capital whose accumulation is possible by investing a part of income into its production. Likewise, they further submitted that human capital depreciates with the same rate as physical capital. In developing their model, they included human capital using the Solow model in conjuction with the Cobb-Douglas production function as follows:

$$Yt = K_t^{\alpha} H_t^{\beta} (A_t L_t)^{1-\alpha-\beta}$$

This equation is referred to as the human capital augmented Solow model where Y is defined as output, H as stock of human capital, K is defined as capital, A is referred to as level of technology, while L is defined as labour force. The exponentials, α, β as well as 1-α-β are defined as input-output elasticity coefficients. Like the Solow original model, the augmented growth model also regarded long-run growth as exogenous with rate equals the pace of technological progress (Mankiw, et al., 1992).

3.0 Methodology

3.1 Research Design

The study is quantitative in nature and as such uses secondary data. Further, the tool of econometrics was employed for the data analysis after the stochastic properties and the cointegration level of the series have been checked.

3.2 Population and Sampling

The population of the study comprises all variables relating to human capital development such as primary, secondary and tertiary education enrolments as well as all indicators of development. Accordingly, a simple random sampling that affords every participant equal opportunity of being selected was chosen. Therefore, one dependent variable and four explanatory variables spanning the period, 1986-2021 were employed for the study.

3.3 Sources of Data

The data on gross domestic product, government spending and adult literacy rate were culled from the various issues of the annual report and statement of account

of the Central Bank of Nigeria. Similarly, data on schools enrolments were sourced from the World Bank data bases.

3.4 Technique of Analysis

The technique of error correction method is employed for the study for the purpose of analyzing the short run and the long run relationship between variables. This is preceded by cointegration test using the approach of Johansen (1988) technique.

3.5 Model Specification

The study adopts a variant of the human capital augmented Solow model where output is made as function of labour, capital and human capital variables. Accordingly, the model developed by Emediegwu and Clement (2016) in which economic growth is made a function of investment in human capital is adopted for the study. In what follows, the study employed error correction technique (ECT) in the context of OLS regression model. Essentially the model is presented as follows:

$$GDP = f(PSE, SSE, ALR, GEE) \quad \text{.....(1)}$$

In log stochastic form, equation (1) is estimated as follows:

$$InGDP_t = \beta_0 + \beta_1 InPSE_t + \beta_2 InSSE_t + \beta_3 InALR_t + \beta_4 InGEE_t + \varepsilon_t \quad \text{.....(2)}$$

Where:

GDP = gross domestic product at 2010 constant price in billions of Naira, PSE = primary school enrolments in millions, SSE = secondary school enrolments in millions, ALR = adult literacy rate, GEE = government spending on education in billions of Naira. Also, β_0 = constant, $\beta_1 - \beta_4$ = coefficients to be estimated. ε = error terms, t = time trend. It is expected that the influence of the regressors on economic growth should be positive. According to the ECT of equation 2 is estimated as follows:

$$\Delta InGDP_t = \sigma_0 + \sum_{i=1}^{K} \sigma 1i \Delta InGDP_{t-1} + \sum_{i-1}^{K} \sigma 2i \Delta InPPE_{t-1} + \sum_{i=1}^{K} \sigma 3i \Delta InSSE_{t-1} + \sum_{i=1}^{k} \sigma 4i \Delta InALR_{t-1}$$

$$+ \sum_{t-1}^{k} \sigma 5i \Delta GGE_{t-1} + \lambda ECM_{t-1} \quad \text{.....(.3)}$$

Where the term ECM which implies error correction mechanism refers to the short run estimation, a residual which has earlier been generated from the long-run dynamic model. Thus, while the variable carrying Δ could be termed short run, the

model is also regarded as a long run estimate occasioned by the presence of the ECM. The symbol λ refers to the coefficient and describes the speed of adjustment between the long and short runs whenever disequilibrium occurs. To ensure that the model of ECM is stable the Cumulative Sum of Recursive Residuals (CUSUM) as well as the Cumulative Sum of Square of Recursive Residuals (CUSUMSQ) are employed for the test whose equation has been developed by Brown, et al., (1975).

3.5.1 Unit Root Test

In order to avoid a situation of spurious regression, the stochastic properties of the variables were checked using the Augmented Dickey Fuller (ADF) test and the Phillips-Perron test. These tests become more important as the Johansen co-integration test requires only integration of order 1 variables. Accordingly, the ADF test is estimated as follows:

$$\Delta I_t = \varphi_i + \varpi I_{t-1} + \varphi_{2t} + \sum_{t=1}^{p} \delta i \Delta I_{t-1} + \mu t \quad \text{.....(4)}$$

Here, I_t refers to the relevant time series; Δ defines the differencing operator; t = time trend and μt refers to error term. For a stationarity to exist of a variable, the null hypothesis must be rejected, when the values of ADF and PP tests exceed the Mackinnon critical value chosen for this study which is 5% level of significant.

3.5.2 Co-integration Test

In conducting this test, the Johansen and Juselius (1990) approach is employed to ascertain if long run equilibrium relationship exists among variables. Accordingly, two likelihood ratio tests have been developed by Johansen and Juselius. These include the trace statistic which tests the null hypothesis of co-integrating relations as follows:

$$\Gamma_{trace}(r) = -\tau \sum_{i=1}^{m} \log\left[1 - \lambda_t\right] \quad \text{.....(5}a\text{)}$$

The other is Maximum Eigen static which also tests the null hypothesis of r co-integrating relation as follows:

$$\Gamma_{\max}(r, r+1) = \iota \log(1 - \lambda r + 1) \quad \text{.....(5}b\text{)}$$

4.0. Result and Discussion

Table 1 contains the results of unit root using the ADF and PP tests at 5% level of significant. The results indicate that all five variables as contained in equation (1) show evidence of unit root at level, but stationarity was achieved for the series following further differencing.

Table 1: Unit Root Test Results

ADF Test				PP Test		
Variable	Level	First Diff	Order	Level	First Diff	Order
LGDP	-3.12	-4.31	1	-3.34	-4.67	1
LPSE	-2.87	-3.87	1	-2.98	-3.79	1
LSSE	-3.43	-5.42	1	-3.52	-6.86	1
LALR	-2.76	-4.59	1	-3.41	-5.90	1
LGEE	-3.38	-4.66	1	-3.52	-6.88	1
C.V. = 5%	-3.56	-3.58		-3.56	-3.58	

Source: Extracted from Eview 12.0

The presence of co-integrating variables implies that at least one co-integrating equation is evidenced which is achieved if the value of the trace or max-eigen or both exceed either of the 5% or 1% respectively. Therefore, Table 2 reveals that there is at least one co-integrating relationship for the variables, since the trace and the Eigen values indicate presence of co-integration at all confidence levels. This suggests that the variables have long run tendency during the review period.

Table 2: Johansen Co-integration test

Eigen Value	**Trace Stat**	**5%**	**1%**
0.87	141.3	97.5	112.5
0.76	91.2	74.3	88.6
Max-Eigen stat			
0.87	67.9	42.7	54.3
0.76	45.5	36.8	39.3

Source: Extracted from Eview 12.0

With cointegration relationship established as suggested by the variables in equation (1) and the fact that the series were stationary at first differencing, a crucial

condition for restricted error correction mechanism has been meant. Accordingly, Table 3 contains the short run model where the ECM which is statistically significant indicated the speed of adjustment by which equilibrium is restored in the event that deviation from equilibrium occurs between the long and short run models. The ECM coefficient of 0.47 suggests that the disequilibrium which occurred in the course of last year was corrected with a speed of 47%. Essentially, the ECM does not only observed the expected negative sign, it is also statistically significant, a behavioural trend normally followed if the dependent variable and its determinants are co-integrated. The significant level of the ECM also suggests that changes in the regressors significantly influenced growth and development in Nigeria during the course of the long run. A cursory look at the results revealed that all the regressors explained changes of about 65% in growth performance in Nigeria. Also, the test of DW statistics indicated that autocorrelation is not present in the model and the F-stat of 9.2 shows the extent the entire model is significant. What this implies is that the model is statistically significant so that policy suggestions can be based on it. Likewise, the constant indicated that growth during the period maintained positive trajectory in the absence of all the independent variables. The result from the model in equation is presented in Table 3.

Table 3: Parsimonious ECM Results

Dependent variable: DLGDP

Method: Least Square

Variable	**Coeff**	**Std error**	**t-stat**	**Prob**
C	0.44	0.18	2.44	0.05
ΔLGDP(-1)	0.15	0.04	3.75	0.00
ΔLPSE	0.22	0.08	2.75	0.01
ΔLSSE	0.45	0.13	3.46	0.00
ΔLGEE	-0.35	0.23	-1.52	0.13
ΔLALR	0.28	0.09	3.11	0.00
ECM(-1)	-0.47	0.12	-3.92	0.00
Diagnostic Test				
R^2	0.65			
DW	2.03			
F-stat	9.21			

Source: Author's computation using Eview 12.0

It should be noted that the coefficient of ECM encompasses the speed of adjustment between the long run and the short run disequilibrium estimates. Therefore, primary school enrolment, secondary school enrolment, adult literacy rate as well as the first lag of GDP exerted positive and significant effect on growth and development during the short run. What this implies is that changes in any of the independent variables tend to significantly affect economic growth in the period of consideration. For instance, an increase in enrolments into primary school education by say 100% increases economic growth by 22% in the period under consideration. Likewise, a 10% increase in previous GDP led to increase of 1.5% in current GDP. The results therefore give credence to the findings of Jaiyeoba (2015), Uduh and Benedict (2017) and Chijioke and Amadi (2019), but contrary to Yusuff (2021) and Raymond and Ekponaanuadum (2021). Furthermore, the results also revealed that spending on education by government is insignificantly negative in affecting growth and development which further suggests that no relationship is evidenced between these variables during the review period. This is contrary to the findings earlier reached by Ogunleye, et al., (2017).

5. Conclusion and Recommendations

The study assessed the extent at which spending on human capital education tends to affect sustainable growth performance in Nigeria. It was noted by the study that any effort made at boosting education in human capital through expenditure channel is necessary to ensure that economic growth is not only achieved, but that the needed development remains sustainable. This, notwithstanding, the kind of education offered in Nigeria is not the type that will bring about the desired development. It was observed by the study that with exception of education spending by government, all the explanatory variables were statistically significant and positively correlated with economic performance in Nigeria. The implications on the economy call for the need by government to massively invest on every level of educational sector including vocational education. The result is that a good number of the youth with acquired skills will be useful to the economy and to themselves thereby discouraging the current migration exodus abroad called 'Japa'. On the bases of the findings, some recommendations were put forward by the study. Firstly, that the current budgetary allocation into the educational sector is considered too paltry so that upward review should be considered so as to ensure conducive learning environment. Secondly, the United Nations recommendation of allocating 26% of national GDP into education sector should be considered very seriously by policy makers. Finally, there is need for expansion of schools most so

as to accommodate more enrolments particularly at the elementary level of education in Nigeria.

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